Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): A predistorter operable to compensate for distortion introduced by a semiconductor device, comprising:

an index module operable to generate index values from a combination of current and past values of an input signal intended for the semiconductor device;

a lookup table operable to provide one of a plurality of correction factors in response to each of the index values; and

a conditioning module operable to apply the correction factor to a future value of the input signal, wherein application of the correction factor to the future value of the input signal compensates, at least in part, for portions of the distortion corresponding to both the current and past values of the input signal.

2. (Currently Amended): A predistorter operable to compensate for distortion introduced by a semiconductor device, comprising:

a lookup table operable to provide a correction factor in response to an index value generated from a plurality of past values of an input signal intended for the semiconductor device; and

a conditioning module operable to apply the correction factor to a current value of the input signal, wherein application of the correction factor to the current value of the input signal compensates, at least in part, for portions of the distortion corresponding to the plurality of past values of the input signal.

3. (Currently Amended): The predistorter in claim 2~~1~~, further comprising:

an index module operable to generate the index value.

4. (Original): A predistorter operable to compensate for distortion introduced by a semiconductor device, comprising:

an input module configured for receiving a current input signal intended for the semiconductor device;

a feedback module configured for receiving a feedback signal from the semiconductor device, the feedback signal being the result of the current input signal having been processed by the semiconductor device;

a comparator configured for aligning the current input signal and the feedback signal in determining a differential value;

a lookup table configured for correlating an index generated from the current input signal and a past input signal with a correction factor, the correction factor being a function of the differential value; and

an output module configured for conditioning a future input signal with the correction factor and outputting the conditioned future input signal to the semiconductor device, the conditioned future input signal being able to compensate, at least in part, for portions of the distortion corresponding to both the current and past input signals.

5. (Original): The predistorter of claim 4, wherein the input module comprises a converter for converting the current input signal into a set of corresponding signal components.

6. (Original): The predistorter of claim 5, wherein the signal components are in-phase and quadrature.

7. (Original): The predistorter of claim 5, wherein the signal components are magnitude and phase.

8. (Original): The predistorter of claim 4, wherein the feedback module comprises a converter for converting the feedback signal into a set of corresponding signal components.

9. (Original): The predistorter of claim 8, wherein the signal components are in-phase and quadrature.

10. (Original): The predistorter of claim 8, wherein the signal components are magnitude and phase.

11. (Original): The predistorter of claim 4, wherein the semiconductor device is a power amplifier.

12. (Original): The predistorter of claim 4, wherein the comparator comprises:
a delay module for delaying the current input signal to match with the feedback signal.

13. (Original): The predistorter of claim 12, wherein the comparator further comprises:
a logic operator for combining the current input signal and the feedback signal in determining the differential value.

14. (Original): The predistorter of claim 13, wherein the logic operator is an adder.

15. (Original): The predistorter of claim 13, wherein the differential value is calculated for in-phase and quadrature signal components.

16. (Original): The predistorter of claim 4, wherein the index is generated from a filter.

17. (Original): The predistorter of claim 16, wherein the filter is selected from the group consisting of FIR and IIR.

18. (Original): The predistorter of claim 4, wherein the index is selected from the group consisting of magnitude, phase, in-phase, and quadrature.

19. (Original): The predistorter of claim 4, wherein the correction factor is calculated by subtracting at least a portion of the differential value from a prior correction factor.

20. (Original): The predistorter of claim 4, wherein the differential value is a non-linear function of heat generated in the semiconductor device.

21. (Original): The predistorter of claim 4, wherein the feedback module, comparator, lookup table, and output module are each configured to function automatically upon receiving the current input signal by the input module.

22. (Original): The predistorter of claim 4, wherein the output module comprises a logic operator for adjusting the future input signal with the correction factor.

23. (Original): The predistorter of claim 22, wherein the logic operator is a multiplier.

24. (Original): A method to compensate distortion introduced by a semiconductor device:

receiving a current input signal intended for the semiconductor device;

receiving a feedback signal from the semiconductor device, the feedback signal being the result of the current input signal having been processed by the semiconductor device;

aligning the current input signal and the feedback signal in determining a differential value;

calculating a correction factor, the correction factor being a function of the differential value;

generating an index from the current input signal and a past input signal;

correlating the index with the correction factor;

conditioning a future input signal with the correction factor; and

outputting the conditioned future input signal to the semiconductor device, the conditioned future input signal being able to compensate, at least in part, for portions of the distortion corresponding to both the current and past input signals.

25. (Original): The method of claim 24, further comprising:

converting the current input signal into a set of corresponding signal components.

26. (Original): The method of claim 25, wherein the signal components are in-phase and quadrature.

27. (Original): The method of claim 25, wherein the signal components are magnitude and phase.

28. (Original): The method of claim 24, further comprising:

converting the feedback signal into a set of corresponding signal components.

29. (Original): The method of claim 28, wherein the signal components are in-phase and quadrature.

30. (Original): The method of claim 28, wherein the signal components are magnitude and phase.

31. (Original): The method of claim 24, wherein the semiconductor device is a power amplifier.

32. (Original): The method of claim 24, wherein aligning the current input signal and the feedback signal comprises:

delaying the current input signal to match with the feedback signal.

33. (Original): The method of claim 32, wherein aligning the current input signal and the feedback signal further comprises:

combining the current input signal and the feedback signal in determining the differential value.

34. (Original): The method of claim 33, wherein the differential value is calculated for applying to in-phase and quadrature signal components.

35. (Original): The method of claim 24, wherein generating the index comprises:

filtering the current input signal with a past input signal.

36. (Original): The method of claim 24, wherein the index is selected from the group consisting of magnitude, phase, in-phase, and quadrature.

37. (Original): The method of claim 24, wherein calculating the correction factor comprises:

multiplying the differential value by a convergence factor and subtracting this result from a prior correction factor, wherein the convergence factor is a constant between 0 and 1.

38. (Original): The method of claim 24, wherein the differential value is a non-linear function of heat generated in the semiconductor device.

39. (Original): The method of claim 24, wherein the steps following the receiving of the input signal can be performed automatically.

40. (Original): A predistorter operable to compensate for distortion introduced by a semiconductor device, comprising:

an input module configured for receiving a current input signal intended for the semiconductor device;

a feedback module configured for receiving a feedback signal from the semiconductor device, the feedback signal being the result of the current input signal having been processed by the semiconductor device;

a comparator configured for aligning the current input signal and the feedback signal in determining a differential value;

means for generating an index from the current input signal and a past input signal;

a lookup table configured for correlating the index with a correction factor, the correction factor being a function of the differential value; and

an output module configured for conditioning a future input signal with the correction factor and outputting the conditioned future input signal to the semiconductor device, the conditioned future input signal being able to compensate, at least in part, for portions of the distortion corresponding to both the current and past input signals.

41. (Original): A computer program product for programming a PLD to compensate for distortion introduced by a semiconductor device, the computer program product comprising:

at least one computer readable medium; and

computer program instructions stored within the at least one computer readable product configure for:

receiving a current input signal intended for the semiconductor device;

receiving a feedback signal from the semiconductor device, the feedback signal being the result of the current input signal having been processed by the semiconductor device;

aligning the current input signal and the feedback signal in determining a differential value;

calculating a correction factor, the correction factor being a function of the differential value;

generating an index from the current input signal and a past input signal;

correlating the index with the correction factor;

conditioning a future input signal with the correction factor; and

outputting the conditioned future input signal to the semiconductor device, the conditioned future input signal being able to compensate, at least in part, for portions of the distortion corresponding to both the current and past input signals.

42. (Currently Amended): An electronic system, comprising:

a predistorter operable to compensate for distortion introduced by a semiconductor device, comprising:

an index module operable to generate index values from a combination of current and past values of an input signal intended for the semiconductor device;

a lookup table operable to provide one of a plurality of correction factors in response to each of the index values;

a conditioning module operable to apply the correction factor to a future value of the input signal, wherein application of the correction factor to the future value of the input signal compensates, at least in part, for portions of the distortion corresponding to both the current and past values of the input signal.

43. (Original): The electronic system of claim 42, wherein the electronic system is selected from the group consisting of ASIC, PLD, DSP/PLD, and ASIC/DSP.

44. (New): The predistorter in claim 1, wherein the index module is operable to calculate a weighting sum of the current and past values of the input signal and to give more weight to recent values of the input signal in generating the index values.

45. (New): The predistorter in claim 44, wherein the index module comprises an FIR filter.

46. (New): The predistorter in claim 44, wherein the index module comprises an IIR filter.